

AVIATION WEEK

A MCGRAW-HILL PUBLICATION

JULY 5, 1948

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OIL HEAT TRANSFER UNITS

AVIATION WEEK, July 5, 1948

Aircut Bolt
A26 5/16"

Aircut Bolt
A26 3/8"

Aircut Torx/Starline Screw
A26 6/16"

Aircut Bolt
A26 1/2"

Aircut Bolt and Shank
A26 1/2"

Aircut Torx/Starline Screw
A26 3/4"

Roeking supplies complete direct control assemblies ready for installation, or manufacturers a full line of winged universal Wires for Roeking A-902 describing the who name of Roeking systems for various

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Robert H. Wood

Model 14: Mixed Stochastic processes

Robert B. Heine	Sam Ellis	Katherine Johnson	Concord
Irvine Stone	Talbot Folger	Stanley L. Collier	Proctor's River
William Keizer	Wendell Taylor	Karl Adams	El Dorado Adams
Alexander McSorley	John H. Smith	Arvid Seib	El Dorado Adams
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[illegible]

HERE ARE THE FIGURES:

AGENTS	Using Double-Deckers	Using Standard Fleet
Bureau in New York	45 units	83 units
New York to Philadelphia	37 units	64 units
Philadelphia to Baltimore	30 units	40 units
Baltimore to Washington, D. C.	30 units	34 units
Washington, D. C. to Elkhart, West Va.	50 units	78 units
Elkhart, West Va. to Parkersburg, West Va.	31 units	48 units
Parkersburg, West Va. to Cincinnati	51 units	77 units
Cincinnati to Indianapolis	40 units	49 units
Indianapolis to Chicago	55 units	68 units

⁴Did you mean "The Case of Airline X" or "The Case of Airline Y"? We'll be happy to send you copies.

MINUTES count when you're flying short-haul routes, because they're the difference between profit and loss. That's why Delta's new 737-400 is proving itself as much greater than expected—and much more fun to fly.

The modern airliner offers high-speed, luxury service to shorter destinations, almost nonstop passenger and generous meals (with no extra charge), plus a small but useful cargo section. The 737-400 can carry three smaller aircraft because it is FAA-approved to take off and land with maximum load in the shortest distance of any twin-engine jet. It carries 216 passengers in the standard power twin engine plane's 80. And its simplified loading, unloading and servicing means shorter stop times—hope.

Julius Z is a typical example! Based on aerial performance figures, + Martin 2-0-2 being 80% faster than grey warblers, on the hypothetical route would be almost 16% faster than Boston and Chicago. That is a maximum saving of 15% in route time. Thus, the 2-0-2 would be landing in Chicago while the greenish glaucous was only halfway between Philadelphia, West Va., and Cincinnati. Given that these figures concern the route ground time the both places. Actually, the Martin 2-0-2 would save still more time because it requires less time on the ground between landing and taking off. Just additional value on the 2-0-2.

Here's one more example of why the Martin 14-2 — the world's big new engine-driven — is the place to put engines in the back! For full details, write today to The Elmer L. Martin Company, Baltimore 3, Maryland.

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THE AVIATION WEEK

GI Flight Training Passes Peak

Gradual slackening of veterans' enrollment in aviation training will become more and more apparent in following weeks and months. Some schools already are cancelling their GI Bill programs. Volume of flight training under the GI Bill of Rights has passed its peak, according to best estimates obtainable by *American Voice*.

But the drop-off will not be nearly as abrupt and painful as it threatened to be a few weeks ago. A slowly surfaced and heavily veiled civil aviation industry has seen to that with the powerful support of thousands of veteran flight trainees and former students.

35,000 Telegrams

Alert Washington representatives of aviation groups directly concerned quickly spotted a "steeper" clause in the supplemental appropriation bill, which now being passed through Congress in the hurried closing days.

Unabated, it would have authorized Veterans Administration to phase out any veterans' training which VA regarded as "vocational and recreational." Top VA officials, not noted for their intransigence, had already described GI flight training repeatedly by use of these same two adjectives. They were ready to start granting

[Drover of over sets by VA regional offices against flight training at length. Similar acts by top Washington VA officials have been fewer but more far-reaching.]

Official Washington today has a new aspect for civil aviation at the post-war level, as a result of the prompt action which followed discovery of the offending clause. During one night and only the next morning, before the bill was to be reported out on the House floor, representatives heard from the folks back home. Long distance telephone lines and telegraph wires from all parts of the U. S. crinkled with the heat of veterans' messages to Congress.

It was reported that at least 35,000 telegrams came in to the representatives in Washington, urging drastic alteration of the dangerous clause.

New and Solid Prestige

Resulting Congressional action, after a tough and terrible battle actively supported by more thousands of telegrams to aviation, gave new and solid prestige to flight training for veterans. The bill now provided that the veteran who wishes to take flight training for use in his present or intended business or occupation is specifically authorized to do so. Such training is exempted from the classification of "vocational and recreational."

But the Congressional action at the same time can plenty not the ground from under any justification for

perch "sport" flying, thereby writing its doom as of July 1.

Let Regions Do It

Just before the July 1 deadline for new contracts, A. H. Monk, director of VA's training facilities service for vocational rehabilitation and education, told *American Voice* that no general policy statement had gone out to Regional VA offices on the letting of new aviation training contracts. He said responsibility for the contracts was with the regions. Asked about the policy of memorandum agreements between the regional offices and individual schools, where contracts could not be completed by July 1, Monk said VA preferred for the schools to have contracts. In some cases where work loads in the regional offices was too great or in some other cases contracts could not be completed, memorandum agreements could be used at discretion of the regional office, pending completion. VA's last letter on the number of flight schools and veterans enrolled in those date back to Nov. 1, 1947 when there were 366 schools and 118,400 enrolled.

No Intent To Circumvent

Washington VA officials have denied categorically any design to circumvent the intent of Congress contained in the amendment exempting from the "vocational and recreational" status flight training for use in business. Flight operators who experience more than reasonable delay in some VA regional offices on their contracts may therefore get a hearing on their complaints by direct appeal to Washington, it is indicated.

Drop-Out to Be Expected

A gradual decline in the number of aviation trainees has been foreseen, for several reasons not particularly connected with the VA's attitude toward flight training. Many observers feel that the strong strain taken by VA against flight training was "swartling head" attacking a situation rapidly changing regardless of the VA attack.

The GI Bill of Rights provides all training must be completed within one year after July 25, 1947. Veterans must have enrolled within five years after that date in any course they expect to take.

Only a limited number of the total veterans eligible for GI training are interested in aviation training. It is the belief of well qualified observers that a large percentage of this segment has already enrolled and that the enrollment from this point on will decline steadily, regardless of either official attack or pomp-praising.

Next businessmen among flight school operators already are looking hard for new private student business and tightening their belts for a slack period.

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NEWS DIGEST

DOMESTIC

Mark E. Nye, Boeing sales business director for Eastern Air Lines, has become director of public relations for Curtiss-Wright Corp.

Stratum F-40 jet fighters of the 56th Fighter Group will fly across the Atlantic to Germany on July 7 for a two-week visit. The flight will be made from Selfridge Air Force Base, MI. Germany, Munich via Labrador, Greenland, Iceland, and England to Frankfurt, Germany. The 16th Fighter Group from the Canal Zone will be transferred to Germany via surface transportation in August. The 56th Fighter Group (Republik F-47 Thunderbolt) is the current group in Germany.

At Espana shipments in domestic airline service in April gained 9.1 percent over the same month a year ago. A total of 332,621 shipments was handled compared to 304,905 in April, 1947.

Herman Trophy, awarded annually prior to the war for the most outstanding aviator of the year of the award, will name its successors following a New York Supreme Court upholding the will of the late Clifford B. Herman, who bequeathed \$55,000 for the purpose at his death on June 25, 1945. A nephew and two sons sought to set the will aside claiming the award as "act of caprice" rather than clarity.

FOREIGN

Falco Gaudyus established a world helicopter speed record of 126.5 mph over a three-kilometer course at Maidenhead, England. The craft was piloted by René Ariet and elapsed the former mark of 119.5 mph held by an Air Force Sikorsky HO-4 since June, 1946.

Sociedade Aeromaria de Transportes Aereos has purchased two de Havilland Dove eight-passenger transports for use in interisland service between the Azores and England. The planes will operate from Sao Miguel, Azores airport.

Czechoslovak Airlines will open regular service between Prague and Beirut, Lebanon initially on a weekly basis. Flights will leave Prague every Wednesday, stop overnight at Athens and arrive Beirut on Thursday. Fare will be \$250 one-way.

U. S. Post Office Dept. announces the resumption of both air and surface mail to the state of Israel. Air mail in 75 cents a half-ounce, surface and by coach first class and there costs each additional ounce. Maximum weight is four pounds, air parcels and letters may not contain merchandise.



Photo above shows B-29 bomber B-29 Superfortress after making turn, on the first mission since July.

Whoosh! It's America's "hottest" bomber!

This big bomber, leaping skyward with incredible dash, is the new Boeing XB-47 Stratojet—starting performer among the Air Force's new planes.

As large as a B-29, the Stratojet burts itself into the air like a projectile. Eighteen boosters rocket units and six jet engines give it a maximum of 45,000 pounds thrust. In level flight it travels along like a giant arrow, with ten tons of bombs.

The Stratojet's top speed and other performance data are carefully guarded secrets. But its sweep-back wings and tail surfaces, trim landing gear and streamlined nacelles are a clear indication of the speeds for which it was designed.

That the Stratojet is flying today—as realization of the need for air defense reaches a peak—is a tribute to the foresight of the U. S. Air Force

and to Boeing's advanced planning. It is the first large airplane of such radical design to be built—and it made its first test flight only 18 months after that design was put on paper.

More than five months of Boeing tests have proved that, in the Stratojet, America has developed one of the world's most significant defense weapons.

For the Air Force, Boeing is building the B-50 Superfortress.

XB-47 Stratojet, and C-107 Superfortress—for the Army, the U.S. Navy these planes—and for the major airlines, the new Boeing 707 Superjet.



BOEING

Congress' Work Shows New Air Interest

Joint Board inspires recognition of commercial and military aviation progress.

The 80th Congress made industrial progress toward establishment of stable and potent military and civilian aviation progress.

Congress' increased interest and concern with commercial aviation progress is reflected in its important role as an auxiliary driving air power. For instance, during the joint board on Capital Hill, credit is largely due to the joint Congressional Aviation Policy Board, headed by House's GOP Sen. Owen Brewster, chairman, and Capitol Hill's GOP Rep. Carl E. Winter, vice chairman.

The 80th Congress tested numerous proposals for commercial aviation progress in the next Congress by decision, and also helped to complete action on other non-controversial matters. For instance, the Congress was divided with both national defense and civil aviation.

Noticed Defense Funds: The \$1,341,911,000 budget approved for the Air Force, more than double the \$1,292,720,000 provided for the 1946 fiscal year, will permit USAF to launch several procurement projects to a 70 Group program. But Budget Bureau and Congressional committees were of general expense funds will allow USAF to fund just to support an establishment for even a 66-group program. The \$1,458,000,000 budget approved for Naval Aviation is almost double the \$749,000,000 allowed. Naval Aviation for the past fiscal year.

The \$66,345,000 budget allowed National Aeronautics Commission for Aeronautics-500,000,000 civil and \$15,180,000 contract authorization for new construction and equipment—set on a 10-year basis.

In addition, in its closing hours, the Congress approved deficiency funds for major public aviation progress over the next year for the Army USAF \$74,800,000, plus \$175,000,000 contract authorization and Navy \$51,137,500, plus \$50,000,000 contract authorization.

Civilian Aviation Funds: The \$149,000,000 budget given CAA was up \$10,855,000 over the 1946 fiscal year budget (\$118,144,530) and the \$1,450,000 allowed CAA was the largest budget in the House's history. To increase the progress of the two agencies, Congress directed funds to ease the situation of the CAB chairman and the CAA administrator from \$10,000 to \$12,000 a year; CAA extension claims were up to \$11,500 a year.

Joint board adjustment Congress made through a deficiency budget of \$12,491,499 for CAA. It included \$12,500,000 (\$15,500,000 civil and \$7,000,000 contract authorization) for new construction projects at Fairbanks and Anchorage and \$100,000 for planning on the air navigation system.

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MEDAL FOR GRUMMAN

Leopold G. Grumman, chairman of the board of Grumman Aircraft Engineering Corp., had been awarded the 1946 Daniel Guggenheim Medal for his notable achievement in the advancement of aviation. Congress was cited in particular for his design of aircraft both for "Naval and postwar use." Last year's report of the Grumman award was Major Lester D. Guggenheim.

The Congress' performance on national defense aviation legislation was less successful.

70-Group USAF: Legislation authorizing a 70-Group Air Force program—excluding required supporting service components, a personnel strength of 391,000, an aircraft strength of 21,000 or 22,500, and a total cost of \$1,450,000,000—was approved by the House, only to die in the Senate Armed Services Committee. Selective Service was passed by Congress authorized a \$92,000 strength for USAF.

Procurement: Early in the first session, the Congress passed what is now the Armed Services Procurement Act, easing the requirements for competitive contracting by the services and opening the way for negotiation of contract contracts. But the Congress failed to complete action on several other vital procurement measures.

Legislation repealing provisions of the Vision Unusual Act that limited profits on military and naval aircraft contracts to 12 percent and requiring the Navy to purchase 10 percent of its aircraft at the Philadelphia factory was approved by the House but successfully blocked in the Senate by Pennsylvania's Democratic Sen. Francis Nixon also objected to independence of naval ship construction accomplished at Philadelphia.

Research and Development: The bill authorizing the Secretary for Air is to engage an unlimited number of scientific and professional advisors (at \$50 a day, plus \$15 volunteer), permitting research and development opportunities allocated in the year for which they are made to continue available for other legislation at expenditure over the next four years, and authorizing USAF to finance contract costs for testing facilities up to \$100,000—was passed by the Senate, but this particular measure died in the House Armed Services Committee.

Civilian Progress: On the civilian aviation front, the Congress made several concrete accomplishments. One action vigorously protested in House circles was the board in air mail rates from five to six cents an ounce. After the House was also discussed at the Con-

gress failure to complete action on legislation authorizing the government to station research and development costs on commercial transport and cargo planes. A similar measure is expected to be quickly approved by the new Congress in January.

Among the Congress' accomplishments in the field of civilian aviation legislation:

Air parcel post threat: long urged by airline circles, was authorized and is set for inauguration Sept. 1. Rates were set high, primarily to drive off railroad competition provided if rates were set low enough to make air parcel post directly competitive with surface mail. In addition to increasing airline business, the air parcel post system is expected to wipe out Post Office deliveries in service operations which have caused Congressional problems.

Navigation Program: Legislation giving CAA authority to authorize, construct, and operate airports and air navigation facilities around the world and to train foreign personnel in their operation, was passed by the White House for Presidential signature. Appropriations will have to be obtained from Congress before projects can be undertaken. CAA is authorized to "make part and reasonable charges for aeronautical services (including but not limited to landing fees)." Ironically, the result of the legislation will be to permit CAA to take over operation of military airfields but not about during the war.

Legislation aimed at hastening the domestic air navigation facilities program was also approved. It authorized CAA to acquire (under condemnation power, if necessary, improve, and operate facilities, both on and off the federal system. CAA, now limited to operating facilities on the federal system, is directed in its plans to blanket the country with navigational high frequency radio range installations.

USA's request for veto power over proposed international was rejected by Congress.

Congress also approved legislation authorizing the Civil Aeronautics Board to take action on safety and other matters in connection with the airline industry. This provision alone is one concerning, and thus seems the major hurdle of obtaining CAB approval. Federal Air Lines would undoubtedly contest strongly a merger between National and Delta if the latter comes before CAB for approval. A calculation of board findings might require well over a year for a decision.

Rumors of a National merger have been current for several months, stimulated by the apparently inevitable strike situation involving NAL, the Air Line Pilots Association and the Inter-



STRATOVISION BROADCAST TEST

First commercial television broadcast to be carried by the Stratovision system—the National National Communications—powered the system developed by engineers of Westinghouse and Glenn L. Martin. A \$250,000 test of a \$100,000 model at 21,000 ft. over Pittsburgh and relayed the program in its 100-mile radius.

After the test, during the signal from high altitude, the effective distance coverage is increased two and a half times and power required is reduced to one-fifth. Flight view shows various antenna mounted atop the air and large transmitter antenna used projecting below into the commercial operation, Martin T.O.S. would be used.

NAL-Delta Deal to Involve PCA?

Merger of two carriers is far from consummated and observers see other lines eventually in combine.

Major work on a more active role of the United States in the future status of the United States is, however, a distinct possibility for the state-owned National Airlines.

Revelations late last month of reported discussions between NAL and Delta Air Lines officials in no manner that a merger of the two systems will be consummated in the immediate future. The fact is being, and CAB has already been advised naturally of the negotiations.

Delta News: Details remain to be reported, followed by approval from the separate boards of directors of the two companies and subsequent endorsement by the respective stockholders. This procedure alone is time consuming, and thus seems the major hurdle of obtaining CAB approval. Federal Air Lines would undoubtedly contest strongly a merger between National and Delta if the latter comes before CAB for approval. A calculation of board findings might require well over a year for a decision.

Rumors of a National merger have been current for several months, stimulated by the apparently inevitable strike situation involving NAL, the Air Line Pilots Association and the Inter-

national Association of Machinists. A Presidential emergency plan finding Boeing is expected to make a report on the labor disputes early this month, but there is no indication that either G. T. Guter, NAL president, or the union leaders will accept recommendations.

Delta's Condition: Meanwhile, National is operating deeply in the red. During the first quarter of 1948, the company reported a \$718,830 net loss. Meanwhile, the first quarter is a highly profitable period on NAL's side. In Florida, like National, Delta showed heavy deficits both for 1947 and the first quarter of this year.

While National has retained service in all parts of its system, the effects of the pilot strike, which began July 3, are still apparent, with passengers and revenue far below the year passed last year. In April, 1948, NAL carried 7555 revenue passengers, 5,975,000 revenue passenger miles with a 40 percent load factor. In April, 1947, the carrier flew 31,371 revenue passengers, 16,637,000 revenue passenger miles with a 67 percent load factor.

PCA Pulls Back: Administrative sources believe that eventually Capital Airlines might be forced into the Na-

tional-Delta recombination of the latter deal is effected. One source attributed to the exclusion of FCA at this time to the revived nature of the civil aviation trust and reports of a pending reorganization of its branches. Delta and Northeast, on the other hand, have relatively simple capitalizations.

A three-year recapitalization of National Delta and Capital would effectively blanket the same area now served by Eastern as well as render strong support to Capital's assets from Chicago to the Eastern seaboard.

NACA Appoints New Members

Changes in the National Advisory Committee for Aeronautics include appointment of Dr. James Harold Doolittle and Dr. DeWitt W. Brink as additional members, and creation of the post of Director of the Research and Development Board in a permanent government close to the Committee.

James Doolittle, who served as a United States general and commander of the Twelfth Army Air Force, is now president of Shell Union Oil Corp. and a pioneer engineering test pilot. He made the first complete "blind landing" and has worked the Schneider and Thompson trophies and the Cosmo-Gram Model of Honor, the latter for his historic run in Tokyo.

Program Rescinded—Dr. Brink is Chairman of the National Research Council and a specialist in aerodynamic research, indicating a broadening of the Committee's research program to include the new field. Brink as Director of the Johnson Foundation for Medical Physics at the University of Pennsylvania and served during the war as Co-director of Research in the Air Service's Office of the Air Forces.

The establishment of the Research and Development Board is a permanent NACA membership change. Dr. Vannevar Bush from a "member from private life" to a government member.

GE Leaves Plant

General Electric Co. has leased the former Wright Aeronautical engine plant at Lockhead, Ohio for the production of the new J47 (JG-19) turbojet engines, scheduled for installation in the North American F-84A, supersonic fighters and other new Air Force types.

The 700,000-sq. ft. facility will employ about 2000 people. Production is expected to get under way by the end of this year.

GE is stating the plant will enable the aircraft gas turbine division to triple turbojet engine production, now centered at Lynn, Mass.

Douglas Promises Cargo DC-6

Although no orders are in sight, company believes cargo field will develop fast enough to justify new plane.

Douglas Aircraft Co. will build a cargo version of the DC-6.

The Douglas Airfreight (DC-6A) will be designed to carry a 38,000 lb. payload on a 9-3 hour, one-stop transcontinental haul for a direct operational cost of 4.7 cents per ton mile. One major structural change from the DC-6 will be addition of five feet to the fuselage. Freighter is scheduled to fly next spring.

Following are the salient features of the DC-6A:

- **Performance:** Gross weight of 96,000 lb., empty weight 49,450 lb., maximum speed at 28,000 ft. 353 mph., cruise at 28,000 ft. 344 mph., sea level stall speed at 58,000 lb. gross, 5140 ft., at 7000 ft. above sea level, 7900 ft. landing at 58,000 lb. and sea level, 5140 ft. at 5000 ft. above sea level and 58,500 lb., 5150 ft.

- **Cargo Facilities:** 5000 cubic ft. cargo space including 4175 cubic ft. in the main cargo compartment, wide single door front and aft allowing simultaneous loading and unloading, specially

strengthened cargo compartment floor, cargo compartment pressurization and temperature control, and Phoenix plus Phoenix armament, maximum.

- **Price:** DC-6A will sell for about \$960,000, slightly less than the passenger version.
- **Costs:** According to the Air Transport Association journals, the DC-6A will have a direct operating cost of 4.7 cents per ton mile (4.5 cents with zero headload) for one-stop transcontinental service. For nonstop Chicago West Coast routes, a 5.3 cent direct cost is indicated (5.5 cents if non headload). Douglas estimates the DC-6A will be able to do the work of two DC-4s.

In addition to the cargo interior, Douglas has designed a mail section that can accommodate all equipment now used in a standard 60 ft. railway car car. With passage of the so-called post bill, Douglas anticipates in parking the mail interior a more than threefold.

- **Fully in Freight—Donald Douglas** said he has decided to proceed with the

DC-6A Airfreight project without any loss of military or commercial orders. He is convinced that the future of air freight will be very well in demand, and he expects a chance to reap some of its staggering DC-6 passenger carrier losses on the cargo version. Commercial sales of the DC-6 have virtually halted in 1949 with an estimated 100 units required to break even on the project. Douglas lost on the DC-6 project more than \$10,000,000.

Equipment financing appears to be the largest obstacle to DC-6A sales. Major non-scheduled airfreighters including Slick and the Flying Tiger Line have long been interested in a cargo version of the DC-6 for infant air freight coast to coast air freight service.

E. E. Wilson Elected McGraw-Hill Director

Eugene E. Wilson, aircraft industry leader and spokesman, has been elected a director of the McGraw-Hill Publishing Co.

During much of his career, Wilson, now 60, has served aircraft manufacturing companies in top executive capacities.

Retired vice chairman of United Aircraft Corp., he was president at one time of three of its divisions—Hamilton Standard Propeller Corp., Sikorsky Aircraft Corp., and Chance Vought Corp.

Later he became president of United Aircraft, moving from there to the war headquarters.

An *Aeronautics* graduate, he spent 25 years in the Navy, including the early period of Naval Aviation, before entering the aviation manufacturing field in 1918.

Wilson was president and chairman of the Aircraft Industry Association. He is a staunch advocate of a strong national air police, and wrote the book, "An Air Police Force."

Dr. Joseph Doolittle, leading aerospace engineer, is also a McGraw-Hill director.

Track Gear Contract

Frankford Engine and Airplane Corp. has been awarded a contract for the installation of 16 sets of track-type landing gear assemblies on the C-52 Packet cargo plane. The planes are now in service with the North Air Force and will be flown to Hagerstown, Md., by the contractor. Frankford will also deliver five sets of the landing gear, gear sets for the track-gear design.

Frankford developed the Packet version of the gear into a completely interchangeable assembly.



GLOSTER METEOR VII—FASTEST TRAINER

Shown in flight, this Gloster Meteor VII, 107 mph, the VII is equipped with two Rolls-Royce Derwent engines. Cost for absolute ceiling of 40,000 ft. and rate of climb of 7000 ft./min. Gloster will try to sell the trainer to countries that need a fast trainer for advanced training.

Crash Probers Cite CO₂ Danger

CAA recommends precautions in use of extinguishers as proof is sought that UAL pilots were asphyxiated.

Preliminary procedures in the use of carbon dioxide fire extinguishers were recommended last week by CAA. This was a result of flight tests conducted by Douglas Aircraft Co. and the CAA after crash of a United Air Lines DC-6 near General, Pa. last month.

CAA advised that pilots use oxygen masks, depressurized aircraft cabins and begin detailed smoke clearance procedures when carbon dioxide fire extinguishers are discharged in flight. Douglas Aircraft Co. recommended oxygen masks and goggles worn by those flying during the extensive DC-6 modifications last winter indicated a need for improved controls in the baggage compartments. A type type control is now said that will retain at least 15 percent of the carbon dioxide discharged into a compartment for two hours. The device is designed as meeting standard CAA requirements.

TWA Tests—TWA conducted evidence of smoke release during flight tests on its Constellation. On May 15 a TWA Constellation got fire warnings from the forward baggage compartment and pilots discharged two units of carbon dioxide extinguishers. Pilots were nearly asphyxiated by the carbon dioxide leaking into the cockpit. An emergency landing was made at Chubbuck, N. H. Report: There was no evidence of fire in the baggage compartment.

Fire Warnings—Pilot of DC-6 and DC-4 transport have reported numerous false fire indications from detectors on

flying a photoelectric cell. CAA authorized airlines to disconnect these indicators of their detectors until Aug. 1 when improved detectors are expected to be available.

Excessive leakage of carbon dioxide into the cockpit at both the DC-6 and Lockheed Constellation is possible if precautionary procedures are not followed when discharging both barrels of fire extinguishers. Discharge of a single tank is not dangerous, tests indicated flight and ground tests were by those flying during the extensive DC-6 modifications last winter indicated a need for improved controls in the baggage compartments.

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LARGEST DOUGLAS TRANSPORT

Air Force stock of the Douglas C-124A which will go into production for the Air Force as a military transport down the mainline through the middle of the year. The plane is now being used for electrical cargo loads at the wing. Designed for a 175,000 lb. gross

weight, the C-124A is about two and a half times the size of the Douglas C-54. It will carry a payload of 30,000 lb. on a 1000-mile range. It is powered by four Pratt & Whitney Wasp Major engines with Hamilton Standard fixed-blade propellers.

ICAO Acts on Airline Financing

International convention will pave way for equipment trust arrangements. Congressional action still to come.

Significant progress in facilitating the widespread utilization of equipment trusts as a means of airline financing is being made on diverse fronts.

In the international field, ICAO action is apace. Last August, a working group would negotiate the property rights of aircraft financing trust facilities.

This third mortgage convention, called "International Recognition of Rights in Aircraft," was developed by the Legal Committee of the International Civil Aviation Organization at the Brussels Conference in September, 1947.

Adopted at Geneva—Under the leadership of Russell H. Adams, chief U.S. delegate to the Assembly of ICAO which recently met in Geneva, the convention was adopted. It is expected that this agreement will be highly satisfactory to the U.S. Government and to airplane manufacturers and operators as well as the courts.

The importance of this accomplishment is highlighted by the fact that 12 years international laws have failed to mandate constructive national law on the subject. Here difficulty is that more uniform with legal systems based on Roman law do not have any such law. The English concept of the chattel mortgage.

This has been a major law to handle and aircraft manufacturers seeking a form of security for loans to plane purchasers which would stand as high as a first mortgage no matter where the location of the plane.

In many countries, under existing statutes, tax liens and attachments arising from the membership of an operator for supplies and other kinds of claims may take priority over a mortgage.

► **New Principle.**—The new convention establishes the principle that property rights, including mortgages, contracted in accordance with the law of one contracting state shall be recognized as all other contracting states as having priority over all other claims on a plane or its operation. An exception is made the claim arising out of salvage operations or expenses incurred by actions

found indispensable to the preservation of the vessel.

The value of the agreement, however, will be limited to those countries approving this convention. Debate limitations may be focused on the lack of protection present in any sense of national aircraft financing trust facilities.

It is probable that under the leadership of the major air powers, however, this respect may be broadened to include all nations, and all the countries along the international air routes.

The adoption of this convention was strongly recommended by the Congressional Air Policy Board.

► **U.S. Laws.**—Much remains to be done with our own laws to achieve significantly more complete trust financing. CAPA advanced a series of pertinent recommendations and sponsored several legislative bills. One bill provided for the recording of claims and liens against aircraft. Another removed the liability for aircraft accidents on the part of trustee owners in certain states where suits were met.

Both of these measures passed the Senate, but were still awaiting action in the House at adjournment.

The remaining CAPA recommendations for clarification of the legal question of recording of mortgages and property in bankruptcy was not presented to the recent session of Congress. A preliminary survey disclosed that to enact such a provision would require a complete revision of current federal bankruptcy legislation. This was too involved a procedure to accomplish at this time.

► **Bankruptcy Changes.**—To facilitate the security having adequately in credit assignments, it is believed that revision of the Bankruptcy Act may be necessary, making it clear that the trustee obtain ownership of the aircraft equipment in the event of bankruptcy.

The removal of all obstacles making possible the widespread use of equipment trust financing would be of great help to the airlines as well as to the aircraft builders. It must be strongly emphasized, however, that no airplane would be available.

Fundamentally, the individual credit position of the financing airline will remain the key determinant. Equipment trust financing would add greater flexibility to an airline's lease acquisition program. Moreover, it would be a better position to take advantage of special market circumstances.

► **Accessory Recording.**—The recording of engines, spare parts and other major accessories also is expected to be beneficial in the use of other financing instruments, such as chattel mortgages and traditional sales contracts.

Recently, Trans-Continental Air Cline Lines said it had accomplished the first lease financing when it leased a new aircraft delivery was secured by an equipment mortgage. This is unique. The claim attributed to New York, leading under that financing is "without precedent in aviation history" is possibly correct, but not in the same is stated.

► **Trans-Continental lease.**—In this particular transaction, Trans-Continental sold \$15 million in equipment trust notes, secured by a Douglas DC-4. The same carries an interest rate of 7 percent and is convertible into common stock at \$2 per share.

The Trans-Continental paper, underwritten by Guaranty and Co., presumably required considerable "sweetening," hence the high interest rate and unusual conversion provision.

► **Pan Am financing.**—The first and most important trust financing was accomplished by Pan American Airways in January, 1975. The company sold \$2,500,000 in 4 percent equipment trust certificates to its financial institutions. The funds were applied toward the purchase of Boeing Clippers.

Pan American had an initial 93 percent equity in these planes which provided a wide range of security for the lender. Provision was made for the serial maturity of these certificates over a five-year period. To maintain adequate protection, virtually all of Pan American's equipment was added in collateral to this loan.

► **Advanced.**—This was done in view of the continuous underwriting of engines among the planes, but it proved very useful for both the carrier and the lender. The problem was resolved when Pan American sold the Boeing equipment prior to the maturity of the same and retired the obligation.

More widely used in airline equipment financing have been chattel mortgages and outright loans containing a "negative" pledge clause. The latter is designed to safeguard the lender's position by prohibiting the pledging of aircraft to other lenders. In using this device, the lender is to be less secure position.

—Selig Abraham

ENGINEERING & PRODUCTION

Flat Rates

Pacific Airmotive latest to adopt policy of fixed fees on engine overhaul.

It took could not start to be a service team, development in the engine overhaul business, bringing with it greater production efficiency, reduced overhead and overhead costs prior to a wide variety of customers, it is in actual stages at Pacific Airmotive Corp.

It is a flat rate charge, a policy which is not new, as limited to PAC, but which has probably never before been tried by an organization as large as PAC. What makes PAC's flat rate policy even more significant is the company's key position in the overhaul industry. Its customers include airline manufacturers, aircraft overhaul and maintenance firms, refitted airlines, cargo carriers and international airlines.

► **Catalogs Ready.**—PAC expected to have ready to sell the first of a series of flat rate catalogs that in the end will cover several hundred items and services. The first listing is on the Pratt & Whitney R-3800 and R-3500 engines, with a flat labor charge of \$1250 on a scheduled maintenance at \$1175 on a scheduled-repairs of engine model as listed in the catalog, in an arbitrary manner.

These are the basic rates. Although

they would vary with a customer's own demands (since customers would want more or less service than covered by the rates), advantages to the customer is obvious and lower prices and better budget control are obvious. PAC's manufacturing customer perhaps could put on such a policy.

► **Labor Utilization.**—Advantages to PAC of a flat rate policy are clearly in taking down overhead. As company officials see the plan, they can wipe out the staggering amount of paper work involved in recording the time on each operation as an engine moves through one of the shops. Being able to be simplified. Employees utilized for repair and keeping could be turned to production work. Time of about 15 people can be saved, it is hoped.

The flat rate policy would mean a tightening up in general on the production operations, giving better labor utilization and better scheduling.

While the flat rate plan is barely a month old, it began in June 1974. PAC sees these benefits ahead. To build up experience quickly on the new policy, PAC obtained permission of existing customers to flat rate all engines now moving through its shops. Since June 1, more than 100 engines have been flat-rated. PAC officials say the plan is too new yet to have demonstrated its value.

► **Angled Toward Airlines.**—PAC's flat rate policy is angled toward increasing

airline business, and inevitably interest has been shown by the flat rates on its latest acquisition, Southwest Airlines Co., Dallas, which also has gone over to flat rate and is now overhauling for PAC in its shop, is more active in the present and executive place field. Its catalog lists 130 rates and includes the rates for engine, airframe and auxiliary equipment, a value point with PAC because of its heavy airline business.

Boeing Re-Hiring Increasing

Boeing, Anglin Co.'s buying at Seattle for plane assembly being the striking Aero Mechanics Union has now reached a rate of 600 a week. Total work on hourly paid staff about 1500. Half of them, the company claims, formerly belonged to the union.

Meanwhile, the National Labor Relations Board last week was supposed to begin hearings on earlier labor union charges against Boeing. A decision is expected within two months. If found guilty, the company could appeal to the courts and if found down it would be compelled to bargain with the union.

Hughes Eyes Kellin

Hughes Aircraft Co. was disclosed last week as a rival of Fairchild Engine & Airplane Corp. for the helicopter contract of Kellin Aircraft Corp. Fairchild previously entered a bid which is under development by over-occupied Kellin. Hughes plans for increasing use to be filed July 15 in U.S. District Court, Philadelphia.



BOEING MAKING FLYING TANKERS

B-73 and Boeing lines at Boeing's Wichita plant. Boeing's Superfortresses being modified as flying tankers for aerial refueling operations (topright) and their being

equipped for combat operations (left) (bottom left). Fuel tanks and wing tips are mounted outside indicate they are constructed for service in the Arctic. B-73 has

in background these planes look from storage point. Boeing will use other plant space to build up for production of a plane not yet specified by USAF.

Personnel Changes At Weatherhead

Hayley Clark, vice president in charge of sales for the Weatherhead Co., has been advanced to executive head of design and domestic sales division. R. P. Gibson, formerly vice president in charge of the automotive sales division, has been appointed vice president in addition to general sales manager.

Weatherhead also announced three other sales changes. M. C. Peterson, formerly sales manager of the industrial hose division, has been appointed assistant general sales manager. John D. Baldwin has been appointed chief product engineer and Charles H. Clavette chief design engineer.

In other personnel actions:

10 and 12 announced election of General William H. Shivers as president and a member of the corporation, effective July 3. Robert Cox, has appointed Vincent P. Sweeney as assistant manager of the aircraft applications group in the aircraft equipment division.

3M Name Check Corp., Dayton-Wright subsidiary, has appointed Frank M. Yarbrough and George and Edgar to the Chicago and Cincinnati sales representatives.

Colwell Engineering, Inc., has appointed Alton Lettman as purchasing manager. Leonard Fryer and John H. Smith have been named as sales representatives of the company's South American Division.

Kennametal, Inc., has made Gerald Frey general and company representative in the San Francisco office.

Kirtland-Wright Corp. has appointed George M. Joyce as president of the company division at Columbus, Ohio. Edmund M. Joyce was named as vice president and general manager of the company's machine division.

Forster Appliances Co. appointed John W. Overholt as sales engineer for special projects. General Electric Co. named Edward C. Gray as sales engineer of the company's heavy machine group in the company's heavy machine group in the company's heavy machine group.

Kennametal, Inc., has appointed Joseph Butler as advertising and public relations manager.

Rock and Carter Petroleum Industries, Inc., has appointed Frank S. Johnson as president of the company's heavy machine group in the company's heavy machine group.

Weatherhead Co. has appointed William D. Kelly head of engineering and design.

Weatherhead Co. has appointed D. R. Lettman as assistant general sales manager.

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BRIEFING PRODUCTION NEWS

► Pacific Aircraft Corp., Burbank, Calif., has received a contract for the construction and repair of engines, accessories, propellers and instruments of the Menzies Flying Squadron, Hawaii.

► Hamilton Standard Propeller Division, United Aircraft Corp., now is delivering complete propellers 15-ft. three-blade propellers to the Navy for installation on the Lockheed P-3V Neptune aircraft. The new propeller has hollow steel blades equipped with internal electric heating, replacing the solid steel blades and roller on the type.

► Lear, Inc., Grand Rapids, Mich., has purchased Roscoe Pump Co., Hyattsville, Ohio, through a stock-exchange arrangement. Roscoe manufactures fuel, water, injection, hydraulic and oil pumps and valves and will continue their activities as a Lear Division. Joseph H. Lyons, Roscoe president, becomes vice president of Lear and manager of the Roscoe Division.

► B. F. Goodrich Co. has opened its multi-million dollar research center at Louisville, Ohio—between Akron and Cleveland. The facilities include an buildings on the 261-acre site completely equipped with scientific tools and equipment.

► Kansas Aircraft Corp. has expanded its flight test section at Bradley Field, Windsor Locks, Conn., by the addition of James F. McVay, Jr., former Navy pilot. Kansas is engaged in development of the K-116 helicopter including an experimental contract from the Navy for design data, construction, tests, stress analysis and engineering report covering the rotor control system.

► B. H. Alford Co., Inc., has moved into its new building in Farmington, N. H. The company is a source for precision made aircraft components, serving many leading engine and propeller manufacturers.

► Avionics Corp., New York City, has been recognized as the Avionics Division of Rosamond Corp. and will continue its manufacture of avionics, radio, television, roll and remote industry technical communications equipment.

► Strand-Davis, Gardena, Calif., has appointed William A. Service, Tinseltown, N. J., and Wisconsin Aircraft Sales and Service, Boeing Field, Seattle, as distributors of S-D Park & Whitney B-1890-91 inverted engines.

► Federal Tool and Mfg. Co., Minneapolis, Minn., has moved into its new plant at 3020 Aldrich Ave., Minneapolis. The company manufactures sheet metal stampings.

► Manning, Maxwell and Moore, Inc., New York City, has acquired the hydraulic division of the Arms Manufacturing Co. and will develop industrial applications for Arms Hydraulic products in addition to the present hydraulic field of relief valves, shock, and pneumatic pressure valves for the aircraft industry.

► Glens L. Martin Co. has developed a new automobile brake design which has been named by the U. S. Patent Office. The brake can be used on 50 percent fewer parts than the conventional hydraulic brake yet is claimed to possess more positive action, greater braking surface and other advantages.

► Cerberus-Wright-Columbus has received its third order for 1000 hydraulic automobile lifts from the Joyce-Cordell Co. of Dayton, Ohio. Production will begin immediately with complete fabrication accuracy and painting of the lifts done in the plant. The lifts are shipped direct to filling stations and garages around the country.

► Thompson Aircraft Products Co., Cleveland, is looking for a new plant for the manufacture of gas turbine blades and other jet engine parts. A branch at Newark, Ohio, is being considered. This is larger than the present Thompson plant in Euclid, Ohio.

► Continental Motors Corp., designers of engines in May saw the highest in a year and exceeded storage shipments during the preceding 11 months by 62 percent. Total shipments called for a 15 percent increase over May.

► North American Aviation, Inc., has expanded its engine and turbine engine testing facility. The move will shorten the lead time and permit close control of specialized engine testing.

► Northrop Aircraft, Inc., has initiated a ground crew service training program under which about 30 civilian men and civilian employees will be trained in the service, maintenance and repair of the B-55 and B-56 Flying Wing bombers. The training program requires about five weeks and will be divided between Hawthorne, Calif., and Marine Air Force Base, Calif.



The NEW Marquette Model 3V Wiper

► The new windshield wiper incorporates every feature that is desirable and practical, based on thousands of installations on military, naval and commercial aircraft. It is the result of more than ten years of experience in this highly specialized field.

Blades are synchronized at all times. • Obstruction in path of blade will not stall it. Blade wiper wipe in case of opposed direction. • Blades are parked and locked when wiper is not in use. • Universal drive arm and tie rod require minimum stock of parts. • Wiper blades are easily replaced. • Pressure is removed from system when not in operation. • Motor unit may be located at any position in the airplane. Stroke on each window can be varied. • Hydraulic tubing eliminates linkage control and provides additional space for mounting other instruments. • Motor unit and window unit are universal, providing maximum interchangeability of parts. • Constant torque values through entire stroke. • Uniform stroke at all speeds. • Simplicity of design, resulting in lower first cost and reduced maintenance expense.

The Marquette METAL PRODUCTS CO.
CLEVELAND 16, OHIO

SUBSIDIARY OF CURTIS-WRIGHT CORPORATION

Manufacturers of: HYDRAULIC, ELECTRIC AND AIR PRESSURE WINDSHIELD WIPERS
HYDRAULIC GOVERNORS FOR DIESEL ENGINES • ROLLER BEARING TEXTILE SPINNERS
FUEL OIL PUMPS • AIR COMPRESSORS • PRECISION PARTS AND ASSEMBLIES

ELECTRICAL DEVELOPMENT

With driving equipment now generally regarded as regular light equipment rather than as emergency equipment, developments will be rapidly progressing to make these systems more efficient both from the operational and service standpoints.

Electrical stress is an important factor in these systems. In progressively enlarging areas which caused the flow of heavy cur-



References

SEQUENCE DE-ICER TIMING WITHOUT "OFF" PERIODS

WITHOUT doubt, the 1977 election is shaping up to be the most important in the history of the U.S. Senate. It will be the first time since 1946 that more than 50% of the Senate will be up for reelection. It will also be the first time since 1946 that more than 50% of the Senate will be up for reelection. It will also be the first time since 1946 that more than 50% of the Senate will be up for reelection.

Because of its extreme volatility, the rates can be supplied in quotations listing percentages. Such Pacific employees are available to discuss your application requirements.



Business Sales Office: 877-888-4444 • New York: 212-512-2000 • Canadian Office: 1-800-387-8600 • Fax: 212-512-2001

A new sequence timer has been developed by Fluidic Dynamics Bioscience Aviation Corporation, which not only eliminates all adjustment but provides continuous monitoring which eliminates the "off" period, thus providing up to ten percent more time from a given pressure source load.

The constant speed engine, through the new algorithm, operates in such a way that in four times the speed of the disturbance sweep there is a single pulse, double these map sweep cycles used by the cash that is closed for 180° of the engine for 180° of each revolution. Each lag of the engine is a four-point problem, then hence sweep the engine is not designed that the top rotor is continuously in contact with map sweeping engine. As Fig. 7, as the bottom rotor is in a contact with the engine 180° it is swept 180°.

The map sweep now operates, simultaneously, setting off a four-point map sweep engine in a four-point problem, then hence sweep the engine is not designed that the top rotor is in a contact with the engine 180° it is swept 180°.

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Index

In the case of poplar drying it is often desirable to have two pairs of sawing for a faster drying condition. A modified tower also is desirable. By use of the arrangement shown in figure 2, increased sawing can provide two different separating speeds and the failure of either saw will not produce the other saw inactive as in the case of a one speed motor saw used in one tower.



PHD:

Shows an engine after 13 second burst work to that of the first start at opening, each of the four propellers is engaged 13 seconds out of each 60 seconds, while if the second start is engaged each propeller will be engaged 50 seconds out of every 120 seconds.

2.4. Data management



Track Gear Promises High Utility

New C-82 installation, developed by Fairchild and Firestone, features safety, improved braking, and wider spread of load.

Re Alexander McBurnie

New interest in the utility of the track (concrete) landing gear as a steady undercarriage for large airplanes, has been created by recent demonstrations of the latest version of the gear on the hefty 25-ton Fawcett G-82

The new installation—a joint development of Hirschfeld and Pivronite Tire & Rubber Co.—has come a long way from experimental truck trials earlier last in England and in this country.

- **Tuck's Features—Advantages** of the truck gear, which offset for big airplanes the complexities and extra cost, are cited to be:
- **Shedding** the load over a single run.

- **Compactness**, permitting retraction into a smaller wheel well, as wing, fuselage, or nose.

- Virtual elimination of ground looping, blowouts and punctures, and bounce after a hot landing
- More efficient braking because of larger ground contact area, better heat dissipation

* List wear on belt than on tie, since it runs inside, and because of low rest ground pressure on belt in loading, compared to tie.

► **Minimizes Skidding—Relatively** wide spreading of the load over the track surface makes it possible for places equipped with this gear to operate from sand, snow, dirt, and soil, skidding less than one third as much as conventional wheel gear plants of the same gross weight. Tests indicate

Thus, plus the obvious advantage that the gear is less vulnerable to gunfire than are tires, are reasons why the Air Force has shown a continuing interest in the gear since early in World War II.

► **First Gear**—History of the track gear goes back to a Westland Lysander plane for which Dowty Equipment Co., Ltd. built the first gear of this type, and which used it successfully before World War II in England.

►**U. S. Applications**—The American-built tool gear was installed and flight-tested on a two-engine Douglas A-28 light bomber, Curtiss F-40 fighter, and on a Fairchild PT-26 primary trainer.

While the A-26 is a 10-ton gross weight craft, this was still not a complete test of the gun's ability to handle big plane loads.

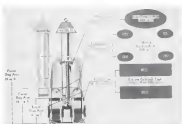
Verdine and Parrish engineers see no reason why the truck gear cannot be used as planned as large as the Consolidated Volvo C-99 and B-36 or even larger.

The C-82 installation is perhaps the first which has practical military usefulness in its present form, and it would not be any great surprise to see a squadron, or perhaps more, of the C-82s and their successors the C-119s, fitted with the track gear because of the greater versatility of land-uses which it makes possible.

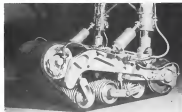
Construction Details—Initially, each track gear is made up of a combination of heavy rollers interconnected and fitted inside an endless rubber belt. Grooves on the belt fit into the grooves on the main surface of the rubber belt. Outside surface of the belt is heavy tread material reinforced with wire cord plies to provide a tough surface for the shoe's landing.

The C-52 gear is a refinement of earlier track gears in several ways. It has a more extensive system of articulation which permits all of the spring units to be an integrated part of the entire shock absorber system and, at the same time, to provide belt tension under all conditions. Belt tension varies in proportion to the load on the front spring units, whereas the A-18 gear belt tension varied in proportion to vertical ground loads.

Spring urethra retractor coiled, neg, sex
negative, etc., which are actually urethra.



The comparison of rocket fueling gear shows features of frontal design, narrow load pressure, point area of angle, and multiple thin and continuous joints.



Clearing of solid rocket gear on C-52 Perlet shows wide belt travel and powered heavy wheels.



Wide "footprint" of truck-type gear on Perlet is evaluated here after fueling.

burns and also shock absorber units.
► Retraction, Baking.—The C-52 truck gear is the first movable and fast to retractable installation. New gear legs are similar to those used on the rocket gear C-52s and the gear set is loaded up into the nacelle behind the engine, in the same manner.

► Braking.—In the front and rear drive of both main gear. There is no braking in the rear gear, but it is the first movable truck gear, using a heavy chow-type strut.
► Weight Factor.—The two main gear weigh 400 lb. each, plus the equivalent of wheel gear, while the same gear installation weighs 275 lb. more-metal solid weight of the installation being 1075 lb.

While additional verification is being sought, it is believed possible that the weight ratio of the truck gear to the wheel gear will show a steady decline as larger gears are used, until the truck gear, at some size will be determined point, will be lighter than wheel gear necessary to carry the same load.

Downy, the British firm engineering the truck gear, reportedly has shelved this design in favor of another somewhat similar type of gear using metal wheel bogies equipped with a "spat type" developed by Downy.

► Company Role.—On the C-52 development, Fairchild was the prime contractor to the Air Force, and Fairchild was subcontractor.

Fairchild provided the engine test, and maintained the bogies so that they proved most fit those on the needs of the job.

Fairchild provided considerable engineering data from its early truck gear to Fairchild.

A Fairchild spokesman says that there is no present Air Force commitment beyond completing the tests on the C-52 equipped with the truck gear. However, the company is hopeful that additional C-52s may be ordered equipped with truck gear, and that other orders may be forthcoming for other sets of the truck gear for use on other large airplanes.

Two past demonstrations of the truck gear on the C-52 were made recently at New York International Airport (Idlewild) before the American Writers Association, and at a Triump Career Command show.

Examination of the gear first hand, indicates that probably for the first time it is being used in an airplane large enough to get full benefit from the gear's peculiar advantages.

Earlier tests appeared not of proportion to actual wheel landing gear use, but the C-52 gear does not start this appearance, and is completely enclosed behind thin doors when fully retracted into nose wheel and nacelle



These predictions are contained in a special opinion survey of the industry by the David and Lucile Packard Foundation under the direction of Dr. C. Edward Plesky, rocket scientist to the organization.

► Technicalities Quoted.—Scientific opinion in 1955 indicated these were three options:

• What will be the most significant achievements in this field in the next five years?

The overwhelming majority took for granted the development of new, more efficient fuels, predicting the development of propellants which will make possible lightweight rockets with high thrust. This means fuels which show as higher temperatures and some higher performance/weight ratios.

Among the promising propellants mentioned are solid-state hydrazine, liquid hydrogen, liquid oxygen, and solid fluorine. The ultimate structure of a nuclear propellant is also predicted.

To make possible the employment of these improved propellants, new methods are anticipated, capable of withstanding the higher temperatures to be developed and new cooling techniques to be evolved. These new materials will also have greater resistance to erosion and corrosion than those now available.

• What is the greatest single need of the field at present?

More research, both basic and applied, into all aspects of rocket is considered the outstanding requirement. This research should be directed toward development of improved propellants, better materials, new combustion processes and cooling techniques, and improved design of control.

The field needs continuation of existing research and development programs, and a system of financing to permit establishment of various long-range programs.

Another crucial need is a greater supply of adequately trained scientist and engineers, preferably with practical experience in all scientific training in engineering and other sciences such as physics, chemistry, and mathematics.

• In your organization doing any research, thinking, or planning with re-

gard to penetration of commercial uses of rockets and if so, on one you give an idea of the nature of this work?

It was indicated that more than 30 percent of the companies were developing work of that nature toward possible future applications.

Right at the moment, research represented some apparent stepped in action in the field of rockets looking to possible civilian uses.

The Army, Navy, and National Aeronautics Committee for Aeronautics are doing no work specifically directed toward possible civilian applications. However, the services are eventually looking to that point and will eventually result from some of their research and development work.

Industrial companies engaged in work looking to possible uses of rockets are concerned mainly with the development of units for use in aircraft engines, in potential missile gun, in landing, in aircraft engine starting, in helicopter propulsion, and in miscellaneous industrial research applications.

• What specific engineering or other technical skills are now in shortest supply?

The skills now in greatest demand are related to the fields of dynamics, chemistry, mechanics, physics, and mathematics.

In the field of dynamics, greatest need is in aerodynamics, aerodynamics, and vibration and other analysis. Chemical equipment are needed for research and in the fields of organic, inorganic, physical and engineering chemistry.

Specialists in mechanics are needed for work on two-mechanisms and turbine-blade-compressor blading, and in the phases of stress analysis and fluid mechanics.

• What additional research not now adequately provided (though present expenditures would be particularly advantageous) to the future development of rocket propulsion?

None of these three, including that in the services, feels confident that he is acquainted with all the research work carried on under government sponsorship.

There is general agreement, however, that the government program is comprehensive, generally expanded, and that few areas of research are neglected.

Nonetheless, it is evident that leaders in the rocket field would welcome the establishment of an independent re-

search program. One reason for this is the expected nature of government-sponsored research and the inherent dangers in a situation where almost the whole support for a research program is undertaken by the Government. If independent research programs are established, it is felt that they should be in the fields of materials, propellants, mechanical design, aerodynamics, thermodynamics, electronics, instruments, gun, guidance, and control and applications of atomic physics to propulsion problems.

In the fuel chemistry field, research programs are needed to study rocket propellant combustion, propellant ignition, desensitization and stability, thrust process design and test procedures, including potential compliance with aerothermal materials in event of nuclear emergency. Also desired is stimulation of other than rocket engine applications to rocket fuels, to developing and promoting manufacturers of processing propellants.

• What specific activities in addition to those now going on would be effective in order to speed the development of rockets?

Programs should be established to start at the education of scientific and engineering personnel, including the creation of professional research in propulsion, research scholarships and fellowships, extension courses for practicing engineers in fields of their employment.

Second, too, a revision of curricula in leading schools to include and emphasize courses in rocket science, the extension of educational and research facilities to schools, and the financing of research research projects.

• Based on the information from research and educational problems, lead on in the field suggest the formation of a committee to survey the ground and the personnel, industrial production of materials, establishment of a periodical in which abstracts of papers might be given and in which broad review by qualified specialists might be provided, a thorough survey of existing literature on the subject and organization of the findings into authoritative treatises on various aspects of the subject; sponsorship of an international conference on rocket propulsion; might want to discuss accommodations and problems, a project for the development of a plane capable of speeds of 1500 mph; review, for commercial use, an investigation of the necessary applications of solid and space power; sponsorship of an interplanetary flight project; establishment of awards for specific achievements in rocket propulsion developments; and more active support for the American Rocket Society and other related societies associated with the work.



CAMERA GRID SETUP (Fig. 1) for checking Constitution's takeoff and landing with 1/100th sec accuracy



From these three parallel video performance data (Fig. 2) (left) down elapsed takeoff time, distance traveled, and final altitude in seconds, (Fig. 3) (right) take distance traveled when 50 ft take height has been cleared, also gives time elapsed

Accurate Checks Without Calculations

Lockheed Aircraft combines camera and grid into one unit to record takeoff and landing times and distances.

A new way to use a camera and grid in obtaining takeoff and landing times and distances is claimed by Lockheed Aircraft Corp. It combines camera and grid into one unit.

This system permits flight test engineers to read directly from a strip of motion picture film—without need for a slide rule to solve geometric relations—step-the complete performance of a plane undergoing takeoff and landing studies.

W. L. Howland, chief of Lockheed's flight test instrumentation group and developer of the new grid system says: "From direct reading of the film we get a timing accuracy within $\pm 1/100$ sec., and a distance-involving accuracy within ± 0.1 ft.

► **Developer's Reception**—Additionally,

Lockheed's is the first camera grid to exclude horizontal distances which are needed to give exact altitude of a subject airplane at every point within the grid's range.

It operates a new vista of flight test capabilities, and is reported to have been loaned Paul Riddle, chief in charge of the flight test section at Wright Field, the declaration that it is the most advanced grid system in the United States, if not the world.

The Air Materiel Command thinks so well of it that a similar installation has been set up at Macair Air Base, and another will soon be erected at Wright Field.

North American Aviation will also have a copy, and Civil Aeronautics Administration engineers are reported to

be greatly interested in a portable unit Lockheed uses at Macair to calibrate takeoffs over a distance of 12,000 ft.

► **Grid's Makeup**—Riddle described it as a non-permanent installation, the probe type of the Lockheed grid (Fig. 1) describes a segment of a circle, so the corner of which is measured the recording camera.

A study of a sample section of flight test film (Fig. 2) shows the direct reading characteristics of the grid.

Against black pyramids along the reference base of the grid frame, are large numbers identifying 100-ft. runway distances marked by vertical lines.

Immediately beneath the distance marker pyramids is a moving metal tape graduated in seconds and one tenth seconds to provide a reference of time elapsed from the start of a takeoff until the end of a landing approach over the grid area.

Below the moving tape, at 14 points,

along the base of the grid frame, is a series of vertical panels which provide reference points for elapsed time data tabulated by the time tape. These panels are color-coded to give time tape corrections at any point in which the camera may be directed, and provide a breakdown of time into hundredths of a second.

► **How Grid Functions**—To illustrate the use of the grid is an actual test, and interpret the time tape, reference is again made to Fig. 2.

At the start of the test the airplane, Lockheed's No. 1 Constitution, was positioned over the runway so that the 0 vertical wire marker of the grid was aligned with the vertical line of a black inverted T painted on the plane's fuselage above the wing and close to the main center of gravity.

As the airplane was accelerated progressively to the takeoff run, both grid camera and time tape were started.

Start of the takeoff run was signaled automatically to the observing camera when the pilot actuated his location-by the flashing of a brilliant light set on the side of the fuselage, and by radio an amber flashing light within the camera. The latter light, amber, was in itself upon the edge of the film used, to provide a double check of the exact time the takeoff roll began.

In the particular test, study of the developed film showed that takeoff began when the moving time tape had progressed to 18 sec.

► **Time, Distance, Altitude**—As shown in Fig. 2, the 0 marker point of the "A" 4-6 sec. vertical scale caught the time tape at exactly 49 sec. By adding the constant of 4 sec. and subtracting the 18 sec. which had elapsed prior to actual start of takeoff, a resultant value of 31 is obtained as the number of seconds of elapsed takeoff time at the instant the picture was taken.

Reference to the grid wires, the inverted T on the fuselage shows a distance traveled of approximately 1460 ft. The photographed flank of two lights in the lower side of the fuselage was at the edge of the wheel well indicates that the aircraft is airborne.

Read directly on right and left lead on gear legs closed the right corner when the gear became fully extended at flight condition was reached. Had the airplane lifted on one leg, leaving deadweight angled upon one gear, only one leg would have shown.

Taking another frame from the motion picture sequence of this particular flight, Fig. 3 shows the Constitution clearing the 50 ft altitude horizontal marker wire at a distance of 2840 ft from start of the takeoff run. Breakdown of the time tape reference (15 plus 21 minus 18) duration on elapsed time of 26 sec. from start of takeoff



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HERE'S HOW A PROBLEM WAS SOLVED—A NEW DESIGN BORN

An Extra BOOST FOR DEPENDABILITY



In emergency or reduced power settings, an auxiliary source of fuel pressure is essential. The auxiliary booster pump, a pump that will give dependable, unintermittent operation and provide positive fuel pressure to the fuel control unit. With the help of Adel Engineers, this problem was solved in the design of the fuel system on the Ryan "Navy". Using the basic proven principle of Adel's wing and boost pumps, Adel Engineers designed a new fuel booster pump that is now giving outstanding performance on the "Navy".

The gas type pump, # 17, is 24 volt dc motor and an adjustable relief valve, are compactly designed into one unit. The pump is ruggedly built, weighs only 1.6 lbs. It is capable of pumping 100 cubic inches at the rate of 30 gph. The Adel fuel booster pump is also suitable for pumping fuel to Avco type carburetors.



FLOW CHART

Indicates output vs pressure with relief valve closed.

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An interesting feature of the fuel system, with respect to the control of fuel flow, is that the start of the fuel flow and point of maximum pressure, is that the fuel system's second pressure is a coordinating check of the fuel flow rate against controls taken by "intuitive" observer" controls within the engine.

Good Reliability is Obviously, the value of such a fuel system as a precision instrument depends upon the exact positioning of its reference, wear and the accuracy of the fuel flow at the time.

Horizontal altitude was maintained by varying 100 ft. increments of the runway controller and then checking each way by its accurate location of a point of light at its relative distance point on the runway.

Horizontal altitude was also checked against whether the runway controller was used to maintain height along the runway controller, under still air conditions.

Movement of the fuel type is a synchronous electric motor which runs at a constant speed with accuracy in 1/10,000 sec. Periodic checks of the fuel and type during mechanical are made to prevent fuel wastage.

While a plastic fuel line type has been used effectively, the fuel type now in use is considered more desirable being less subject to distortion on windy days.

Weight Saving

Use of TST aluminum forgings instead of steel is reported to afford a saving in weight of close to 25 percent on landing gear struts—an advantage shared possibly by a new piston which permits loading of aluminum directly in aluminum.

As fabricated for Chance Vought military craft by Cleveland Pneumatic Tool Co., the outer section of each aluminum landing leg is protected with 902 in. of aluminum applied by the Van der Meer Corp. of America.

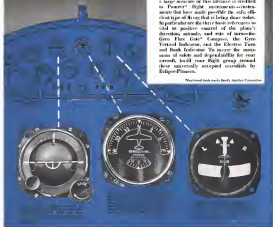
Until the development, it is claimed that use of light metal landing gear struts was impractical, because aluminum has poor resistance to wear, and that in engineering landing struts, wear or scoring at the foot within the oleo cylinder would soon result in leakage of hydraulic fluid.

Precision fitting of aluminum, accomplished without need for underplating, is stated to provide an exception to smooth, hard surface which will wear a tight fit between strut and cylinder, with a life claimed to be several times longer than steel. Test data is reported to show that the aluminum will not fail before the aluminum forging.

3 ESSENTIALS in any flight group

A **PILOTAGE** PROBLEM has been a long, unbroken old "non-solvable" problem, and a large measure of this advance is credited to "Pioneer" flight instruments—controls that have made possible the safe, efficient type of flying that is being done today. In particular, the three basic references to aid in positive control of the plane's direction, attitude, and rate of movement: Gyro Flare Control, the Gyro Vertical Indicator, and the Electric Turn and Bank Indicator. To insure the maximum of safety and dependability for your aircraft, build your flight group around the successfully accepted essentials by Eclipse-Pioneer.

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AVIATION WEEK, July 5, 1948

AVIATION SALES & SERVICE



First meeting of the merged CAA Non-scheduled Flying Advisory Committee with Dale W. Kestel, new CAA administrator, brought together in Washington (left to right) seated the table: Leighton Collins, editor, Air Facts, Inc. Harry Giering, president Burt (Bud) Chandler of Commerce, Fred Lynn Ballinger, Harvard University; William L. Anderson, Pennsylvania

association director, George Hollender, publisher, Southern Flight, Al Koch, CAA assistant administrator, aviation safety, Mrs. Velva Flanagan, insurance photographer, George Buzan, deputy CAA administrator, Lloyd Child, assistant administrator and executive secretary, Administrator Kestel, Don Flores, CAA sales manager and committee chairman, Fred Lee, deputy CAA ad-

ministrator, Frances Albey, CAA safety sales chief, R. S. Hensley, deputy to Koch, J. B. Hartnett, Jr., AOPA general manager, William H. Klenke, Jr., Bureau sales manager, Les Morfin, Public (N. Y.) Association Corp., Harold Wood, Washington (N.Y.) news dealer, Henry van Dine, president, Publisher Flying Service, Stockton, Calif. Meeting was the first for Kestel.

Nonsked Committee Asks End of Spin Test

Group renews request, citing handicap to spinproof planes, and research on causes of spin-stall accidents.

CAA's Nonscheduled Flying Advisory Committee has called for new consideration by CAA and CAB of the committee's previous request that the spin test be eliminated in private pilot examinations.

To support its renewed request, the committee has presented additional evidence, using its own arguments.

- Present spin test requirement puts a premium on the design of airplanes that spin easily so that they can be used in training, and handicaps aircraft that are designed as spinproof or spin resistant.
- Fatalities and serious injuries on stall and spin accidents usually result from dangerous low altitude turns and maneuvers in which the pilot has sudden time and room to recover, even if he knows how.
- Research shows that in spite of training, few pilots can accurately determine when their aircraft is "on the edge of a stall" without mechanical aid, and their ability to recognize a "stall-like stall" does not necessarily mean that the same pilot is able to detect an approaching stall in other flight attitudes.

It was pointed out by the committee that elimination of spin tests from the private pilot curriculum was recommended by the National Aviation Club at Springfield, Ill., last fall, and has been recommended individually by numerous groups of aircraft operators and pilots.

- New Members—The meeting was the first session for several new members of the committee, and for the new Administrator of Civil Aeronautics, Dale W. Kestel.
- New members are: Fred Lynn Ballinger, Harvard University business school, J. B. Hartnett, Jr., general manager of Aircraft Owners & Pilots Association, Leighton Collins, editor of Air Facts, New York, Dr. Harvey L. Chamberlain, president, Burt (Bud) Chandler of Commerce, Harold Wood, Birmingham (Ala.) radio dealer, Henry van Dine, president, Publisher Flying Service, Stockton, Calif.
- Continued Goal — The committee stated a resolution calling for single strip airports is a result of the success of the recently developed outlying landing gear for improved landings. Resolution said:

"In order that airports be more economically located, and the taxpayer less and result in more airports for the same amount of federal money available for Class 1, 2 and 3 airports, it is recommended that where single strip airport design both requires construction of air location and cuts cost to the community, that preference be given to such design."

After discussion of arguments for physical examinations for private pilots every two years, committee members the existing regulations, thereby making a previous recommendation that only one physical examination be given.

• **Shoulder Harness-A** series of CAA investigations into use of shoulder harness for private pilots led nearly to an endorsement of the investigations, but to no positive trend for installation of shoulder harness in personal aircraft.

Recent NOPA news of plane crashes also showed that with such conspicuous examinations are not convincing shoulder harness installations, except experimentally. Europe is reported to be trying a shoulder harness arrangement which attaches behind the seat to structural members, using essentially a standard seat belt, and might cost about \$25 extra in optional extra equipment.

Literature tried shoulder harness responsibility on two places but has no consensus plan for its use. Beech reported shoulder harness could be installed on the Bonanza and specified attachment points but did not indicate what installations are being made.

Other manufacturers reporting report engineering difficulties in finding proper attachment points for shoulder harness on folding front seats of two-place and four-place and six seat airplanes. Some manufacturers that average pilot would not use shoulder harness if he had it.

NOPA reports contrary views in letters from its members who are asking information on how to make home-made shoulder harness translations on their personal planes.

Index members of two plane companies are members of the advisory committee—Dan Flewer, Chairman, and William H. Kline, Jr., Secretary.

• **Other Recommendations—In** status recommendations, the group called for: • **Continual** use of moving light lenses for the runway.

• **A 12 hour** percent of runway weather rather than an eight-hour forecast, and location of local weather bureaus in airports, so that flying weather information could be more available.

• **More emphasis** by flight instructors in stall recognition, and on careful sketching of instruments by students in all flight training periods.

Self-examinations were asked to work out a more acceptable definition of the words "for hire" in the Civil Air Regulations, to study the question of exclusive contracts for sale of airplanes and to support built with federal funds, and to study standardization in enforcement of aviation regulations and supervision of air accidents.

Committee members gave CAA for the designation of industry organizations for airport agencies and for the development project for low expense lightplane medical equipment for VHF news items.

Chairman Flewer pointed and various CAA efforts in addition to Beech and Lloyd Clark, secretary of the advisory committee, participated in the discussion. Principal outside speaker was Dr. F. J. Rabin, Harvard University professor of aeronautics, who reported on the still missing flight instructor which he has been conducting (Aviation Week, Jan. 15).

Waste Rock Runways

Waste Michigan's second airport, the Isle Royale State Field at Houghton, just across Portage Lake and it made up of pulverized waste rock deposited there since 1935 by the

mill of the Isle Royale Copper mine. Flynn says the material deposited by the mill would build runways, the wastes are still being used to enlarge the field.

Used as an airfield for more than 30 years, the field is operated and maintained by Superior Airways and is still open for commercial and private owned planes, and for training courses given by the Michigan College of Mining and Technology. Sculpin anchor in Portage Lake just off the field, and it is used in winter by planes equipped with skis.

Airport in Conflict With Outdoor Movie

An airport operator and the New York license commissioner are trying to figure out whether or not a drive-in theater can be located 90 feet from an airport.

Out of recent regulations are now under way following court issuance of a show-down order requested by the airport operator.

• **James Flynn**—Edward McCormack of Staten Island Airport claims the Department of Marine and Aviation, which controlled flying hours at his field, did so to make way for the service. The department wants paid by Flynn hours from summer-half an hour before sunset to sunrise—3:30 pm.

McCormack says this curfew cut into his business most much of his flying is done just before twilight.

• **Justice Theater**—The New York license commissioner, Benjamin Feldman, has been ordered by the Staten Island Supreme Court to justify his issuance of a license to the new \$150,000 theater.

For Piper Aircraft Financial Comeback

Piper Aircraft Corp. has retired its \$440,000 \$600,000 RFC loan in less than six months, William T. Piper, president, has announced. Statement was effected, he said, through operational expansion, profitable production and steady sales.

He also disclosed that \$110,000 was paid in 12 month installments on June 1 against sales net due until June 15, 1957. Notes had been accepted by the issuance of part due accounts with the understanding that present would be sufficient to the RFC loan. The \$110,000 payment includes outstanding debt to \$121,000. It is expected that further reduction will be made over the next few months.

• **Increase Sales—Piper** said available records for the first half of June indicate the company will step up its plane sales now beyond those of April and May when the company had all other personal plane manufacturers as number of sales.

The Piper corporation made its financial comeback by halting direct production to positive consistency with stock. Stock of finished planes on hand and would now equal, on units and in value, less than a full week's production at current levels.

The Piper line now includes the two-place side-by-side 45-hp Veehead, priced at \$1099 (Stinson Lock Haven, Pa.), a side-by-side 45-hp, trainer at \$1195, a 41-hp, tandem trainer at \$2495, a 30-hp, tandem trainer at \$2375, and a 115-hp four-place Family Cruiser at \$5525.

Airport Suit Dropped

Reactors of Fairview, Akron suburb, apparently have dropped their court fight against Chardonville Airport. They failed to appear three weeks ago at the Ohio Supreme Court before the deadline set after the Ninth District Court of Appeals ruled against them.

James M. W. Chamberlain, owner of the 493-acre \$700,000 airport development, said it was too late to sue contractors that year since he had already consented the field to model plane flying this summer. Construction will be started next spring, but the field probably will not be ready for use until 1959.

Approximately 100 students in the general vicinity of the airport field just set to block the field as a nuisance. They own a Cessna Plus Court decision, only to lose out in the Appellate Court, which authorized completion and operation of the field as a "legitimate and necessary business."

BRIEFING FOR DEALERS & DISTRIBUTORS

• **LEGAL CRASH PRECEDENT**—An aviation legal precedent in New York state was set by a jury finding that Sabalauski Airport Corp. was solely negligent and liable for \$715,40 damages to a house in Sabalauski, N. Y. The house was struck by one of the company's turbine planes. Plane was piloted by Clyde K. Sholom, Boston, Chicago, Mo. and Mrs. Julia J. Crawford, and both pilot and company, but jury held pilot free of negligence.

• **EVANS-TRUMAN PROMOTION**—Chief Evans and George Truman of Washington, D. C., World War II pilots who demonstrated the reliability of the Anzura personal-type plane by flying two 1000 hp. Piper Super Cubes around the world, will now be making aviation training programs. They already filed about half a dozen on the East Coast. Future for this organization they fly into town as the Super Cubes, speak of an aviation dinner in luncheon sponsored by local area organizations on the advantages of learning to fly, and describe their world tour experiences.

• **MASSACHUSETTS INSTALLS GEAR**—Massachusetts Aeronautics Commission has installed a new Goodyear counter gear in the three-engine Stearman Voyager. Used extensively for inspection of new airports and provide transportation of old fields, the plane is expected to provide a service test and demonstration of the crowded gear.

• **CROSS-COUNTRY CROSSWIND**—John E. Stark, assistant to Second Rights CAA administrator, recently picked up CAA's crosswind gear. CAA (Goodyear installation) in Washington and took it to a cross-country test in the Reno-Nevada area. Purpose was two-fold: a further flight demonstration of the gear, and a flight check of possible crosswind. Majority of landings were made in winds of 15 to 35 mph. With gear running low and with 90 mph crosswinds, Stark made two landings on one-stop fields at Clovis, Va., and Ansonia, Va.

Stark reported "the too low" maneuvers along Skyway 1, and found his response at airports along the way was from only to friendly.

He called the Skyway 1 route a "navigator's dream" with plenty of methods to follow. He urged preparation of specific Skyway landings, with instructions to handle flying the route.

• **AERONAUTICAL APPROVALS**—Approval for four installations of Aeromarine poplins in addition to a factory equipment application of the poplins for the Ryan Navion has been announced. Approvals were for the 55-hp, Bonanza Model E, Aeromarine Model E-100 with 65-hp, or F blower, Piper Family Cruiser 34-14, 115 hp, Model F-208, 107-hp Blower, and Model 225 with 68-hp blades and on both the Fairchild Model 41 with 145 hp and the Stearman L-5 with 185 hp. Foreign plane Aeromarine installations have been increased to 10, Koppers Co., Inc., maker of the poplins, reports.

• **JOHNSON IN AGAIN**—Tran reports say R. J. (Pop) Johnson, whose aircraft holding two plane played Johnson Rocket was one of the first power planes to drop out of the market, is preparing another bid for personal plane sales, this time with a "Johnson Rocket 135" dropped to about 185 mph and with a 15-hp wingman. Prototype Rocket 135 is reported nearly complete at a plant in Tyler, Texas.

At full production, the Tyler plant can turn out three Rockets a day with 150 workers, Johnson says. Financial difficulties cut the Rocket off after the company had obtained CAA certification on it, but before any planes had been produced.

• **WALTER BEECH ON TOUR**—Walter H. Beech, president of the aircraft company having his tour, is completing a 45-day sales tour of South American cities, flying in a four-engine Beech D-14. Planned stops on the tour include: Caracas, Venezuela; Rio de Janeiro, Brazil; Caracas, Venezuela; Lima, Peru; Quito, Ecuador; Bogota, Colombia; San Salvador, Panama; and Mexico City. In addition to demonstrating the four-engine, equipped six-place twin Beech, the tour will also include South American government and private business interests in the four-engine Beech Bonanza, and the forthcoming 24-place Beech Twin Quail transport.

—ALEXANDER MCGURELL



LATEST BRITISH LIGHTPLANE

has had capacity of 11 gals, and approximate usage of 378 miles at cruising speed of 46 mph. The Fairy Queen's weight is

approximately 410 lb. Manufacturer claims that the craft is intended to eventually sell in the vicinity of \$2000.



Preparation scene at last year's glider meet at Nauschen, Switzerland.

Swiss Subsidize Private Flying

Influx of U. S. lightplanes pushes sport flying; Aero-Club's 6500 members in variety of activities.

ZURICH—Mountain peaks 12,000 feet high, weather that can't be predicted for much more than 30 minutes at a time, and as steep as the last 300 meters from here and there might keep some flying enthusiasts on the ground—but not the Swiss.

Flying in Switzerland is a very well-organized sport. And most everyone who flies or who wants to fly belongs to the Aero-Club of Switzerland.

Founded in 1901, the club's first members were air pioneers who ventured into the clouds in baskets lashed to goafled balloons. The well-known Swiss scientist Prof. A. Piccard is an honorary member of the club, and M. Devoid of Geneva, renowned club president, is a charter member.

After the first World War, airplanes became more frequent sights on the Swiss primitive Swiss airfields. In 1922, the first glider contest was held in Grench.

► **Membership Is Varied**—Today, the Aero-Club boasts a membership of 6700 persons, divided among those who fly airplanes (powered craft), those who fly gliders (pilot, basket, balloon, sear, and model airplane builders).

Under the leadership of a "Zentral-schreibstube," the club is composed of 50 regional sections. These sections are made up of the groups mentioned above. The secretariat handles administrative details and works out activities set forth by a planning committee, the executive board and a technical commission. It also supervises publication of the monthly aviation magazine, *Aero-Revue*, which has a circulation of 10,000.

► **International Purpos**—When a member pilot desires to visit to make a flight in some other country on the continent, he contacts the Aero-Club and the club furnishes him with maps, weather data and a "certificat de passage"

which is a sort of international passport for his plane. The current system, sponsored by Fédération Aéronautique Internationale, enables him to land on foreign soil without encountering difficulties with the authorities.

During 1947, the club received "certificat de passage" for 250 planes out of a total of 945 licensed civilian planes in the country. Enthusiastic sportsmen by air, the Swiss placed their planes in airports in France, Belgium, Holland, England, Italy and the Scandinavian countries.

Still included, however, is the Aero-Club's bottle of vodka to the first Swiss club member to set his plane down on a Moscow airfield.

► **Government Help**—The matter of insurance, as with most clubs, is a problem here, too. As keen as enthusiasts may be, the Swiss have found it doesn't always believe the books. Members pay dues of 28 Swiss francs (\$5.00) a year which includes a subscription to the magazine *Aero-Revue*. The Federal Government helps out with a contribution of 10,000 Swiss francs a year. Some aviation is picked up through special flights staged for groups and cinephoto collectors, and every year a

special Pro-Aero stamp sale is held for several weeks for the benefit of the club.

With gasoline approximately 60 cents a gallon, flying is not a cheap sport in Switzerland. Plane rental fees are high as is longer space for those who own their own planes.

► **U. S. Plans Used**—Not with the great influx of American-made light airplanes, principally the Piper Cub, civilian sport flying has been given a big boost. Along with Piper, other popular planes are the Cessna, the Luscombe and the Fairchild. An air acrobatic is emphasized as an event more than speed or distance records, the Buckle, a small Cessna biplane, was also popular because of its easy maneuverability, maneuver and power, though it has not been available since the war.

Besides its public relations and administrative duties, the Aero-Club has no flying schools under its supervision. These are located at Bern, Grenchen, Basel, Aarau, St. Gallen, Zug, Lucerne and Zurich. These regular classes are held for students with instruction in both theory and flying.

► **Glider Popular**—Glider has become a popular sport with the Swiss flying set despite the tremendously changeable weather problem. The Swiss glider sections have accepted the challenge of mountain chains and alpine valleys and held their gliding contests right in the heart of the alpine regions.

Stansstad, located in the Upper Engadine valley just far from St. Moritz, was the scene of the first postwar international gliding competition last August. Teams from England, France, Poland, Sweden, Czechoslovakia and Egypt competed with the Swiss in alpine gliding contests.

Who next, the Aero-Club will be host to gliding fans from all over the world at an international glider meeting to be held in Stansstad July 19-21. Club members are hoping that some American teams will participate.

► **Mixed Team England**—The next, sponsored by FAL, originally was scheduled for England as a part of the Olympic competition. Shortages in Tag land led FAL to decide upon Stansstad as host arena.

In addition to these international events, the glider groups stage a large number of domestic and intra-club contests. Throughout each year, the glider pilots keep logs of their flights and then compare their best performances for the year with the Aero Club. The pilot holding the best total record of gliders in that season Swiss champion for that year.

Last summer, Dolf Gubig, who is in charge of the "Zentral-schreibstube," set a new Swiss distance record for gliders by gliding from Zurich to

Geneva, France, in his "Wolke," a German single seater now being built in Sweden. It took him seven hours to make the 134-kilometer trip, crisscrossing over the Swiss Alps.

► **Local on Glider Builders**—Switzerland holds a leading position in Europe for glider construction as well as a top spot in glider performance. Although no powered civilian aircraft are built in the country, the domestically built gliders such as the "Mancini III," the "Spiliger S-15," the "Sylva IV" and the new "WLM-1" are well-known.

The limitations of the war years which brought civilian flying in Switzerland almost to a standstill encouraged model airplane building. Today, it is carried on by 114 active groups under the supervision of the Aero-Club. The nearest Arnold Degen. These groups hold meets during the spring, summer and fall in various places in the country and even into foreign countries, where their model planes have achieved a reputation for quality workmanship.

► **Warehouse Warehouse**—Members of

the Zurich section of model plane builders have constructed an unusual warehouse site on ideally equipped walk and club rooms where they may work on their models every afternoon after school. During vacations, courses in construction and theory are organized on request and led by Aero-Club instructors.

In fact, very early interest in flying is nourished in Swiss youth under Aero-Club supervision and encouraged until these youths are old enough to take part in the other civilian aviation programs flying for fun in Switzerland.

—John P. Fischer

Isla Verde Airport

SAN JUAN—Construction of the Isla Verde airport is expected to get underway now that the Navy Department has withdrawn its objection to the project. Approval of the Puerto Rican planning board is all that is needed to clear the deal.



Two of the model airplanes shown during a meet at the Swiss winter sports resort of Arosa.



AIR TRANSPORT

Cargo Lines' Financial Status Hit

Using CAB data, passenger airlines say independents are in no position to develop airfreight industry.

By Charles Adams

Interests opposed to certification of domestic shipping operations are taking the most of a spotlight now being aimed at the independent airfreight industry's weakest point—its financial instability.

Reflected in their efforts to have the 18-month-old record of the airfreight trade once stopped, the major passenger-carrying airlines are currently gathering new information from reports which all-cargo operators were required to submit to CAB last month. The new data show in detail the extent to which bankruptcy has overtaken the airfreight lines which in 1945, 1946, began presenting their cases for certification to CAB members.

► **Cautious Future**—On the basis of this evidence, the presently certificated carriers are claiming the independents are too weak to be integrated with the future of airfreight. Now expanding their own all-cargo fleets at an unprecedented rate, the passenger-carrying

lines are attempting to show they are in a better position to develop the new industry.

U.S. airline planners, who have said their intention to be certified for all-cargo operations, may be opposed by the independents currently facing financial perils. The industry has lacked all-cargo lines in the past because of their potential contribution toward building a much deeper position reserve pool of several thousand commercial shipments.

► **Fleet Grow Scarily**—Presently certified carriers, which operate about 1,000 transports over domestic and foreign routes, are now pointing out that due to bankruptcies and consolidations among certificated lines the latter are more likely to contract than expand their cargo fleets.

Reason of the uncertificated airfreight is that the passenger-carrying airlines are also in poor financial shape for the next year, and their deficits during the present period for over-sharable losses by all-cargo operators. The independents charge that some of

the certified lines have pointing a finger at all-cargo carrier handicaps would be in the same boat except for emergency action by CAB to increase fuel pay.

► **CAB Delay**—Meanwhile, there is the possibility that further delays by CAB in deciding the airfreight route case will leave other all-cargo lines to the wall. Cost increases in the proceeding will not be paid before August and a Board decision probably will not be forthcoming until late fall—two years after the start of business in the case. In the interim, competition or interruption of the freight business, combined with the new fleet under bright skies, could give the independents a lift.

CAB asked 11 airfreight staff seeking route certification for up-to-date financial and operational data. The reports:

► **Air Borne Cargo Lines, New York**—No report received by CAB. Company uncertain bankruptcy proceedings and a contract. Carrier at one time in 1945 led 10 DC-3s.

► **Air Cargo Transport Corp., New York**—A petition for reorganization was filed in January, but the company has continued operations. Last quarter the company announced a reorganization plan and principal stockholders have indicated necessary funds to place it in operation will be forthcoming. The plan specifically is also acceptable to ALI's largest creditors.

Balance sheet on May 31, 1946, showed current assets \$123,662, total assets \$204,791, current liabilities \$196, capital outstanding \$497,761, and total deficit \$988,265. Including a \$26,794 loss in first quarter 1946. Operating deficits in April and May of this year were \$7201 and \$4113, respectively.

MCY's few 3,000,000 ton miles of freight in 1945 and 2,900,000 in 1947 but only about 255,000 ton miles in first quarter 1946. Company at one time operated 14 DC-3s, but the fleet has been greatly reduced. Personnel on May 31 numbered 23.

► **American, San Antonio**—Recommended for a certificate by CAB members, the company operates small all-cargo routes in western Texas with routes freight consisting almost entirely of papers mailed by its parent firm, Exporters Publishing Co. Carrier has flown 6,000,000 mailpieces in the past two years. Present fleet includes two DC-3s and four Northstar Nomadex planes. More than 50,000 freight ton miles were flown in first quarter 1946. A \$37,363 deficit was reported in June 1947, and a \$49,000 profit in the same month ended May 31, 1946.

► **American Air Express Corp., New York**—No report was received by CAB, with mail returned undelivered. Con-

pany formerly operated coast-to-coast with three C-47s.

► **Calson Air Transport (Jointly Air Travel, Inc.), San Francisco**—Company has been flying in five C-47s and reportedly has not been active in freight operations. Balance sheet on May 31, 1946, showed current assets \$7325, total assets \$126,476, current liabilities \$18,996, deficit to date \$12,136 and capital stock issued \$142,900. Carrier had \$13,411 net loss last year but a \$12,105 profit in the first six months of 1946.

► **California Eastern Airways, Oakland, Calif.**—Action in bankruptcy was filed on May 15, and the company stopped service. Through May 31, 1946, the carrier had an \$88,878 deficit, including \$471,631 in 1947 and \$167,794 in first quarter 1946. Balance sheet as of May 31 showed current assets \$102,603, total assets \$925,610, current liabilities \$461,576 and capital stock outstanding \$995,000. Employment on May 15 was 264.

Form to its bankruptcy proceedings, CEA operated five C-74s coast-to-coast and had planned to lease 10 C-46s from the Air Force. It flew 31,166,942 ton miles of freight last year but had extended only by Skyways and American Airlines. California Eastern owned 3,941,253 freight ton miles in first quarter 1946. CEA's condition will meet Aug. 2 is set as a new financing proposal. The company has been recommended for a certificate by CAB members.

► **Flamingo Air Service, New York**—A petition in bankruptcy was filed May 1, 1946, but the carrier has continued operations. Through May 31, 1946, the company had a \$271,536 deficit, including \$71,931 in 1947 and \$27,803 in first quarter 1946. There was a small profit in April. Balance sheet on May 31 showed current assets \$17,763, total assets \$108,496, current liabilities \$71,497 and total outstanding \$225,000.

FAS started operations in May, 1946, and has been active continuously since then. It had five C-47s and 20 employees on May 15 of this year. The company flew 1,172,971 freight ton miles last year and \$19,415 in first quarter 1946.

► **Globe Freight Airline, Hartford, Conn.**—Company started service on its Boston-New Orleans route in May, 1946, with C-47s but suspended operations in June, 1947, regarding a \$91,476 deficit for the period. During the last half of 1947, Globe flew 108,172 freight ton miles. The carrier planned to resume service this year with three C-46s leased from the Air Force.

► **Midwest Airlines, Buffalo, N. Y.**—No report was received by CAB. Company last year operated five Buffalo to New York and four Buffalo to Detroit and Chicago with C-47s.

► **Slick Airways, San Antonio**—Largest

U.S. airfreight carrier, Slick also apparently is the weakest financially despite assets assets. Deficit through May 31, 1946, was \$1,303,671, including \$444,474 in 1947 and \$37,879 in first quarter 1946.

Balance sheet on May 31, 1946, showed current assets, parts and supplies \$1,146,235, total assets \$2,146,416, current liabilities \$11,232 and capital stock outstanding \$1,758,760. Company flew 21,462,574 freight ton miles last year and 5,461,697 in first quarter 1946. Employees numbered 621 on May 15 of this year. Recommended for a certificate by CAB members, Slick has been operating 11 C-46s, this report available. It plans to lease 10

more aircraft from the Air Force.

► **The Flying Tiger Line, Berkeley, Calif.**—Active as a noncertificated cargo carrier since 1943, the company reported a \$1,135,584 deficit through May 31, 1946 including a \$611,145 loss in 1947 and a \$121,589 loss in the first quarter this year. May 31 balance sheet shows current assets \$827,372, total assets \$1,458,649, current liabilities \$212,099 and capital stock outstanding \$726,000. Operated on National Skyway Pacific Corp., the company flew 5,674,694 freight ton miles last year and 2,732,316 in the first quarter of 1946. Employees on May 31 of this year numbered 252. CAB members have recommended the Tiger for a certificate.



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TACA Trouble

CAB examiner's report asks denial of renewed foreign carrier permit.

Western Starline Corp. has encountered another obstacle in its long fight to serve a route in air transportation.

After losing all attempts to obtain a route certificate from CAB for operations in the Caribbean area, Western Starline Corp. has asked the CAB to reconsider its decision in TACA Airways System, Inc. that view, partly because of the airline carrier's control, TACA may lose its rights to operate between Central America and the U.S.

▼ **U.S. For PAA—Should TACA be denied further access to the U.S.?** it would be a signal victory for Pan American Airways PAA has charged that Western, through control of TACA, is attempting to gain by subterfuge means it could not obtain by direct application. A report issued recently by CAB Examiner William J. Madden recommended denial of application by TACA, S.A., the new foreign air carrier permits authorizing service between San Salvador and Miami and between San Salvador and New Orleans.

Similar protests had been issued TACA, S.A., by CAB early in 1942, but they expired last summer when the U.S. withdrew as a party to the International Air Transport Agreement. TACA has continued to operate under the expired permits.

▼ **Examiner's Report—Madden** recommended denial of the San Salvador-Miami permit in view of TACA's suspension of service on that link only last year. But the date in TACA's initial application was issued in 1942. Western was not in demand for renewal to authorize continued operation of the route in important San Salvador-New Orleans link. Even when CAB gave the original permits to TACA, it recognized that about three fourths of the company's fleet was owned by U.S. rather than Salvadoran owners. The Board decided, however, to issue the permit in accord with the wishes of the Salvadoran Government, although under terms of the International Air Transport Agreement it would have been justified in withdrawing the franchise.

▼ **Western's Control—**Through its wholly owned subsidiary, Western Airlines, Western Starline Corp. now controls about 35 percent of the voting power at TACA Airways S.A. (parent of TACA, S.A.), according to Madden. Next largest block of stock is less than 9 percent. Madden said all the personal affairs of TACA, including President Paul E. Richter, and a majority of the board of directors, appear to

represent Western interests.

"The company represented on the 'airline national interest' in which Western has been paying additional working capital into TACA, which has continued to operate in the red. Western claims ownership in the air carrier but slightly less than the 'going rate' for such assets. The ships are operated by a Western subsidiary, and, Madden continued, so far as TACA is concerned its personal efforts involve entering on its books the profits earned through the charter."

▼ **Issues Denied—Madden** said the fact that TACA is domiciled in El Salvador and does not believe in the nationality and status of the carrier and issues. He added that there was no real unity with a national of the U.S. a fourth-down candidate by CAB as TACA could not be considered as U.S. to El Salvador.

"The TACA application should be considered as though a U.S. national was seeking the right to inaugurate and operate a service in direct competition with another U.S. national (Pan American Airways) which already holds a certificate. Viewed in this light, it appears the application should be denied."

The examiner said that considering the fact that TACA is now controlled by a U.S. airline carrier, the route permit application should be rejected.

U.S. Service

For Iceland Carrier

Icelandic Airlines Ltd., (Lofthafn, HF) has received authority to operate scheduled services over the U.S.

With President Truman's approval, CAB last month issued the company a license to conduct service by jet between Iceland and the United States at points New York and Chicago. The permit was granted in accordance with a reciprocal air transport agreement in effect between the U.S. and Iceland. ICA negotiated concerned no earlier to Iceland in March, 1947.

▼ **New Flights—Operating** domestically in Iceland and internationally between Reykjavik and Frankfurt, Stockholm, Norway, London and Sweden, Lofthafn, HF, owns and operates nine planes including a DC-4.

Until an additional DC-4 is obtained, LHF will operate to U.S. service on a scheduled basis, but on a maximum of six trips monthly. The company has its own maintenance facilities in Iceland, and maintenance of its planes in the U.S. will be provided either by its own mechanics in through arrangements with American carriers. Since LHF lacks adequate facilities for major overhaul of DC-4s to this service will be performed under contract either at the U.S. or in Europe.

CAB Says No

Permission for extraterrestrial, roundtrip summer fares is refused EAL and NAL.

Moves by Eastern Air Lines and National Airlines to follow summer traffic between Florida and western points through long-range roundtrip fares have taken another setback.

Two months ago, CAB suspended proposed EAL and NAL seasonal fares which would have permitted passengers to order a roundtrip for only 125 percent of regular one-way fares between May 1 and Nov. 10.

The Board's action represented a victory for Delta Air Lines and Capital Airlines which saw in the long-range fares the possibility of a grant rate war being disastrous consequences.

▼ **New Attempts—**CAB shortly after suspension of this initial season fare plan, Eastern and National tried again.

They proposed new roundtrip rates providing a more moderate rate—150 percent of regular one-way fares. In suspending the second plan, CAB declared it was fully sympathetic with efforts of any carrier to increase its gross revenues during off-peak periods. The Board pointed out, however, that such efforts must have a reasonable chance of success.

▼ **Lower Rates—**CAB will the 50 percent discount on the price of the return ticket was being proposed for a substantial part of the traffic carried by EAL and NAL, as the fact of generally rising costs. "The amount of new traffic that would be generated by the proposed reductions is purely speculative," the Board continued. "And if the proposed fares should not generate a substantial amount of new traffic the financial effort on [Eastern and National] might be serious."

The decision noted that the proposed reductions might force significant fare declines by other carriers operating on the eastern part of the U.S., thus undermining the existing rate structure.

CAB added that it could not overlook the possibility that before the full rates in which season-comparative fares would be required to be required for seasonal demand compensation by all carriers affected. "The awards are waived," the Board concluded, "to avoid the possibility of benefits to the carriers and the industry."

SAS Daily Service

Scandinavian Airlines System will start daily DC-6 service between New York and Scandinavian capitals Aug. 1. SAS currently is taking delivery on 10 DC-6s.

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WAL'S NEW LOOK

Wearing Western Air Lines new aluminum suitcases, Nilla Landin (left) on the way to boarding her plane is given a guided tour by Virginia Mark, who wears the suitcases.

ATA Elects New Member

Roberto Aranda, Iruco, N. Y., was elected a member of the Air Transport Association at its ATA, board meeting last month. The leader's membership will become effective on the date of the carrier's certification.

ATA's Board of Directors also elected Warren Lee Benson, TWA board chairman, to membership. Benson succeeds LeMotte T. Cohen, former TWA president and now head of Consolidated Vultee Aircraft Corp. In other action, the ATA group approved a considerably reduced budget for operations in the second half of 1955, based Milton W. Arnold, ATA vice president and chairman, and engineering, describe the status of the S-63 as an important traffic control program, and received a report from Stuart G. Tipton, ATA general counsel, on the recent International Civil Aviation Organization meeting at Geneva, Switzerland.

No Pressurization

Northwest Airlines has been sued by a passenger who claims his ear was damaged by a two-step descent. Mrs. Lee Winkley Smith filed a claim of \$25,000, complaining that on a flight from Chicago to Seattle his ear and sinuses were injured personally. During a rapid descent near Billings, Mont., as pressure caused "ascending pain" and brought on a temporary paralysis of her face, throat and tongue, said Mrs. Smith, who was suffering from a cold when she began the flight.

The suit is charged with negligence in making the rapid descent and in permitting her to continue the journey knowing she was ill.

SHORTLINES

►American—Reached a new peak, its cargo volume in May. Airfreight totaled 1,903,639 ton miles, up 152 percent over May, 1947. Express registered 465,745 ton miles, up 22 percent over May last year, and mail 65,715 ton miles, up 16 percent.

►American Overseas—This began its seventh year of service. Since starting operations it has flown more than 154,000 persons across the north Atlantic.

►Continental—Joe Lee Stewards and Stewardess Association has elected Robert F. Cox, CAA, president, of blocking their efforts to organize an employee association "by indirect means" that they are not doing. The statement followed the company's request that the union sign a non-Company contract.

►Hawman—Has added two more DC-3s to its fleet to handle seasonal schedules. Equipment now includes ten passenger DC-4s, two cargo DC-3s and seven passenger Beechcrafts.

►Northwest—From May 15, when NWA began manifesting 5 percent less seats to passengers on delayed flights, through June 9 only 1,008, or 3.4 percent, of scheduled arrivals were more than 15 minutes late. Company says most of the refunds have been small compared to the benefits of the plan during its first three months of operation.

►TACA—Has notified reduced manifesting system plans to Central America effective through Sept. 30.

►TransCanada—Reports to fly 10,000 British passengers to Canada by air using under its arrangement with the Canadian government. Fuel calls for operation of about 210 cargo flights by the end of next month. Flight from Montreal and London began in May.

►United—Has postponed an offering of \$90,015 shares of common stock paid up on fractional shares in last month's DC-6 accident at Mount Carmel, Pa.

►Reopening from between California and Hawaii have been added 10 percent. Company reports 55 percent of all flights departed on time during May against 57 percent in April and 62.5 percent in March. UAL's output for 34 DC-6s is now in operation. Airfreight volume in May, according to 1,699,639 ton miles, up 12 percent over April and 167 percent above May, 1947, total.

►Western—Has taken delivery on the first of its 10 Convairliners.

►West Coast—With officials estimating that six months will be required to

fully Portland's flooded municipal airport for airline operations, WCA has arranged exclusive contracts of McManis, Ore., as an alternate airport for all service to and from Portland.

►Wells Air Service—Reports net income of 1947 in the first quarter as total operating revenues of \$71,346. Company had 179 employees in March. Freight ton miles were total 130,163 in January, 33,776 in February and 144,000 in March. Two DC-4s were added to the Flying Tiger line in February.

CAB SCHEDULE

July 4—Marine on San American Air (Denton 214).
July 5—Old schedule in Washington, D.C. (Denton 214).
July 6—Old schedule in American Overseas (Denton 214).
July 7—Old schedule in TWA (Denton 214).
July 8—Old schedule in United States (Denton 214).
July 9—Old schedule in United States (Denton 214).
July 10—Old schedule in United States (Denton 214).
July 11—Old schedule in United States (Denton 214).
July 12—Old schedule in United States (Denton 214).
July 13—Old schedule in United States (Denton 214).
July 14—Old schedule in United States (Denton 214).
July 15—Old schedule in United States (Denton 214).
July 16—Old schedule in United States (Denton 214).
July 17—Old schedule in United States (Denton 214).
July 18—Old schedule in United States (Denton 214).
July 19—Old schedule in United States (Denton 214).
July 20—Old schedule in United States (Denton 214).
July 21—Old schedule in United States (Denton 214).
July 22—Old schedule in United States (Denton 214).
July 23—Old schedule in United States (Denton 214).
July 24—Old schedule in United States (Denton 214).
July 25—Old schedule in United States (Denton 214).
July 26—Old schedule in United States (Denton 214).
July 27—Old schedule in United States (Denton 214).
July 28—Old schedule in United States (Denton 214).
July 29—Old schedule in United States (Denton 214).
July 30—Old schedule in United States (Denton 214).

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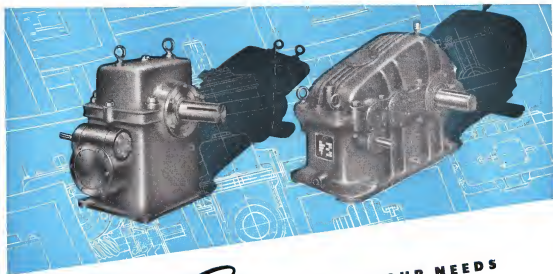
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